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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,570	08/01/2003	Jhon-Jhy Liaw	TSM03-0196	6324
43859	7590	02/15/2006	EXAMINER	
SLATER & MATSIL, L.L.P. 17950 PRESTON ROAD, SUITE 1000 DALLAS, TX 75252			VINH, LAN	
			ART UNIT	PAPER NUMBER
			1765	
DATE MAILED: 02/15/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,570

Applicant(s)

LIAW, JHON-JHY

Examiner

Lan Vinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/31/2006 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 8-11, 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Maszara et al (US 6,486,038)

Maszara discloses a method of isolation of active islands on a SOI device. The method comprises the steps of:

applying a mask layer 20 to a silicon/active layer 16 (col 5, lines 20-30; fig. 5), the layer 16/active layer being on an underlying layer 14 (fig. 5)

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patterning the mask layer 20 to expose/define masked areas/active regions and unmasked/inactive regions of the active layer (fig. 5)

oxidizing the unmasked/inactive region of layer 16 to fully oxidize the unmasked regions/ active region so that the masked/active regions of the layer 16 are isolated from each other, the underlying layer 14 is covered in the unmasked/inactive region (col 6, lines 5-10; fig. 7)

Regarding claim 2, Maszara discloses the layer 516/active layer is an active layer of a silicon-on-insulator wafer (col 5, lines 57-59)

Regarding claim 3, Maszara disclose the step of partially removing the layer 50 in the unmasked regions/inactive regions (fig. 5)

Regarding claim 8, Maszara discloses that the mask layer 20 comprises SiN (col 5, Lines 26-28)

Regarding claim 9, Maszara discloses the step of removing the layer 20/mask layer on the active layer after oxidizing the layer 16 (fig. 9)

The limitation of claim 10 has been discussed above

Regarding claims 11, 15, Maszara discloses performing the oxidation at 1000 degree C in an oxygen-containing atmosphere (col 6, lines 44-46)

4. Claims 16, 18-19, 21-22, 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Maszara et al (US 6,486,038)

Maszara discloses a method of isolation of active islands on a SOI device. The method comprises the steps of:

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applying a mask layer 20 to a silicon/active layer 16 of a SOI wafer (col 5, lines 20-30; fig. 5), the SOI having a substrate layer, the active layer and an insulator 14 in between (col 4, lines 33-35)

patterning the mask layer 20 to expose areas of layer 16 (fig. 5)

etching the SOI wafer to partially expose areas of layer 16/active layer without exposing later 14 (col 5, lines 49-54; fig. 6)

oxidizing the SOI wafer such that the oxidized areas of the layer 16/active layer extend through to the insulator 14 (col 6, lines 5-10; fig. 7)

Regarding claim 18, Maszara discloses patterning the mask layer with photoresist (col 5, lines 24-26)

Regarding claim 19, Maszara discloses that the mask layer 20 comprises SiN (col 5, Lines 26-28)

Regarding claims 21-22, Maszara discloses performing the oxidation at 1000 degree C in an oxygen-containing atmosphere (col 6, lines 44-46)

Regarding claim 24, Maszara Regarding claim 9, Maszara discloses the step of removing the layer 20/mask laye after etching the layer 16 (fig. 9)

The limitation of claim 25 has been discussed above

5. Claims 28-30, 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Maszara et al (US 6,486, 038)

Maszara discloses a method of isolation of active islands on a SOI device. The method comprises the steps of:

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applying a mask layer 20 to a silicon/active layer 16 of a SOI wafer (col 5, lines 20-30; fig. 5), the SOI having a substrate layer, the active layer and an insulator 14 in between (col 4, lines 33-35)

patterning the mask layer 20 to form masked/active and unmaske/inactive regions of layer 16 (fig. 5)

oxidizing the SOI wafer such that the oxidized areas of the layer 16/active layer extend through to the insulator 14 , the insulator layer 14 is not exposed in the unmasked/inactive regions (col 6, lines 5-10; fig. 7)

Regarding claims 29, 34, Maszara discloses patterning the mask layer with photoresist (col 5, lines 24-26)

Regarding claim 30, Maszara discloses that the mask layer 20 comprises SiN (col 5, Lines 26-28)

Regarding claim 37, Maszara discloses performing the oxidation at 1000 degree C in an oxygen-containing atmosphere (col 6, lines 44-46)

Regarding claim 35, Maszara Regarding claim 9, Maszara discloses the step of removing the layer 20/mask layer after etching the layer 16 (fig. 9)

The limitation of claim 36 has been discussed above

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 14, 27, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maszara et al (US 6,486,038) in view of Mirbedini et al (US 6,864,152)

Maszara method has been described above. Unlike the instant claimed inventions as per claim 5, Maszara fails to disclose that the mask layer having a thickness of 10-1500 angstroms

Mirbedini discloses a method of fabricating trenches comprises the step of forming a mask layer 202 having a thickness of 50-500 angstroms (col 5, lines 50-52)

One skilled in the art at the time the invention was made would have found it obvious to modify Maszara method by forming a mask layer having the thickness as taught by Mirbedini because Mirbedini discloses that the oxide layer/mask layer may have a thickness of 50-500 angstroms as known in the art (col 5, lines 48-50)

Unlike the instant claimed inventions as per claims 14, 27, 37, Maszara fails to disclose performing the oxidizing step in an ambient comprising oxygen to create an oxidation layer about 25-800 angstroms

Mirbedini discloses a method of fabricating trenches comprises the step of performing an oxidizing step in an ambient comprising oxygen to create an oxidation layer about 50-500 angstroms (col 7, lines 20-25)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Maszara method by performing the oxidizing step in an ambient comprising oxygen to create an oxidation layer as per Mirbedini because Mirbedini discloses that it is conventional to grow an oxide under oxygen in a furnace, the oxide

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thickness may vary from about 50-500 angstroms (col 7, lines 15-24)

8. Claims 4, 7, 12-13, 17, 20, 23, 26, 31-32, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maszara et al (US 6,486,038) in view of Tseng (US 2002/0090763)

Maszara method has been described above. Regarding claims 7, 20, 31, Maszara discloses that all the layer 16 remains in the unmasked/inactive regions (fig. 5), forming an oxide and nitride layer as masking layer (col 5, lines 22-25; fig. 6). However, unlike the instant claimed invention as per claims 4, 17, 20, 26, 31-32, Maszara fails to disclose the specific thicknesses of the active layer, the oxide and nitride masking layer

Tseng discloses a method of forming a substrate in a SOI wafer comprises the step of forming a silicon/active layer having a thickness of 1000 angstroms (col 2, lines 1-5)

One skilled in the art at the time the invention was made would have found it obvious to modify Maszara method by forming an active/silicon layer having a thickness of 1000 angstroms in view of Tseng because it is conventional in the art to form a silicon layer having a thickness of 1000 angstroms as taught by Tseng

Unlike the instant claimed inventions as per claims 12-13, 23, 38, Maszara fails to disclose using furnace anneal process to perform the oxidation step

Tseng also discloses performing an oxidation process using furnace oxidation process (paragraph 0018). One skilled in the art at the time the invention was made would have found it obvious to modify Maszara method by using a furnace anneal process to

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perform the oxidation step because it is conventional in the art as taught by Tseng

Since, Maszara discloses that the thickness of a layer is desired to be different depending on the oxidation step (col 6, lines 65-67), one skilled in the art at the time the invention was made would have found it obvious to discovering an optimum value for the thicknesses of the oxide and nitride layer since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

Response to Arguments

9. Applicant's arguments with respect to claims 1-5, 7-15, 16-27 have been considered but are moot in view of the new ground(s) of rejection. The applicants argue that the reference of Tseng discloses completely removing the active layer within the inactive regions while the instant claims require that the active layer in the inactive regions are oxidized or the active layer is not completely/partially removed in the inactive regions. This argument is moot in view of newly cited reference of Maszara that discloses removing the layer 16/active layer partially in the unmasked/inactive regions (fig. 6)

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'LV' followed by a stylized flourish.

LV
February 13, 2006